

Remarks

Indefiniteness Rejection

Claim 9 is objected to because of awkward language for which the Examiner has kindly suggested a correction. The Examiner's suggested phrasing has been adopted with thanks.

Novelty Rejections

Two rejections are lodged for lack of novelty. Each is discussed separately below. Overall, the inventive contribution, as more clearly emphasized in the amended claims, includes reconfiguring both an electrical interface and a data translator for communicating with at least one industrial machine based on electrical interface and data translation information about the one or more machines stored in memory. The applied references only deal with the reconfiguration of data, such as by supporting different data protocols. The references are entirely silent about reconfiguring the underlying electrical interfaces. Machine-dictated hardware provides the electrical interfaces as usual and the applied references accommodate the different data structures that result. The claimed invention provides an additional level of flexibility by adapting to the electrical interface requirements of the machines as well.

Claims 1, 2, 4, 6–9, 11, 13, and 14 stand rejected as being anticipated by US Patent No. 6,131,125 to Rostoker et al. The Examiner has carefully laid out the relevance of Rostoker et al. to method claim 8 and by association to apparatus claim 1. Points 8(a)–8(f) of the Examiner’s remarks parallel paragraphs (a) through (f) of claim 8.

The Examiner cites col. 3, lines 34–54 and col. 7, lines 39–53 of Rostoker et al. for meeting the limitations of element (a) of claim 8. The passage in col. 3 refers to memory that “can store program instructions to implement various communication protocols.” Specific embodiments are said to store protocol drivers. Examples are USB protocols and Ethernet protocols. The passage in col. 7 refers to “a library of communication protocol drivers” that can be stored in ROM or downloaded into RAM.

Paragraphs (a) of both claims 1 and 8 have been amended to recite the storing of both electrical interface configuration information and data translation configuration information. The various communication protocols stored by Rostoker et al. include data translation configuration information but do not include any information about electrical interface configurations. Rostoker et al.’s protocols deal with converting data from one format to another but do not deal with electrical issues such as electrical signaling levels.

The Examiner cites col. 2, lines 18–36 and col. 3, lines 34–54 again, along with Figs. 1C and 3B, of Rostoker et al. for meeting the limitations of element (b) of claim 8. The passage in col. 2 and Fig. 1C refer to a prior art “smart cable”, which is not a part of Rostoker et al.’s inventive embodiments and is not a part of the methods or apparatus of Rostoker et al. cited against other elements of the rejected claims. Since by Rostoker et al.’s own determination that such “smart cables” do not meet Rostoker et al.’s requirements for “plug-and-play” and transparency, the ‘smart cables’ cannot be considered an inherent part of Rostoker et al.’s proposed methods or structures.

However that may be, the disclosure of a “smart cable” also does not meet the claim limitations of paragraphs (b) in claims 1 and 8. The “smart cable” only acts as translator between two electrical interfaces associated with different communication protocols. One example features the “smart cable” connecting personal computer having a USB card and a printer having a parallel or Centronics card. The use of the “smart cable” has no effect on the electrical configuration of either card. The two separate cards are still required and the cable merely translates the data between them based on their associated data protocols.

Paragraphs (b) of claims 1 and 8 require configuring the electrical interface characteristics of the electrical interface in response to the stored electrical interface configuration information recited in the

previous paragraphs (a). Not only is there no such stored electrical interface configuration information, there is no teaching in Rostoker et al. relating to the reconfiguration of electrical interfaces. Rostoker et al. simply deals with the electrical configurations of data processing devices as they find them and draws from a library of translators to reformat their data structures.

The invention deals with industrial machines and other capital devices that are not necessarily set up for conventional data transmissions and provides electrical interfaces that are electrically configurable for accepting electrical input and output as data. In addition, the invention also provides the required data translators for reformatting data between various known protocols or even lesser known data structures. Paragraphs (c) of claims 1 and 8 recite the configurable data translators, which is the focus of the Rostoker et al. disclosure.

Claims 1–4, 7–11, and 14 stand rejected as being anticipated by US Patent No. 6,032,203 to Heidhues, who deals with motor control center applications and with the problem of compatibility between different data formats, but, like Rostoker et al., does not provide for electrically reconfiguring electrical interfaces based on information stored about the electrical interface configuration of industrial machines.

For reaching the limitations of paragraphs (a) of claims 1 and 8, the Examiner refers to col. 5, lines 41–64 of Heidhues. There Heidhues's

interface system is explained as having a “Receipt” library, which includes the rules of how to “format and/or translate data” for matching a customers format and selection requirements with the corresponding field device protocols.

Col. 4, lines 19–44 and Fig. 1 are identified in Heidhues as disclosing the limitations of paragraphs (b). There, Heidhues describes an interface system more generally as “resolving the compatibility problem with the protocol related structures.” The interface system performs the tasks of selecting and formatting data and instructions, storing data, handling alarms, operating field devices, and allowing input of parameter data. None of this provides for electrically reconfiguring an electrical interface.

Claims 1 and 8 have been amended to require both the storage of electrical configuration information and the configuring of the electrical interface in response to the stored electrical configuration information. Other claim language specifies that data translation configurations can also be stored and that a data translator is configurable in response to the stored data translation configuration information. The information and configuration electrical interface and the data translator are two separate requirements of claims 1 and 8.

On its most fundamental level, the interface system of Heidhues provides description language objects that allow for the interpretation of

raw data exchanged with devices. Heidhues's language objects allow for the representation and interpretation of meaningful data and instructions. Heidhues's dynamic configurable interface system "works with data blocks" and accommodates changes in the configuration of field devices by updating the system with new communication drivers. Nothing in Heidhues is drawn from memory to affect the electrical configuration of the electrical interface with connected devices. Heidhues accommodates the resulting data protocol changes associated with differing electrical interfaces but do not provide for configuring the electrical interfaces themselves.

Obviousness Rejections

Four obviousness rejections have been applied against paired combinations of claims. All four rejections are based primarily upon the patent disclosures of Rostoker et al. or Heidhues and both of these disclosures are fundamentally inadequate for meeting the terms of the two independent claims 1 and 8. The suggested combinations with other references do not cure these deficiencies.

Claims 3 and 10 stand rejected as obvious over the combination of the patent to Rostoker et al. and US Patent No. 5,729,204 to Fackler et al. **Claims 5 and 12** stand rejected as obvious over the combination of the patent to Rostoker and US Patent No. 6,088,624 to Khan et al.

With respect to the base claims 1 and 8, neither Fackler et al. nor Khan et al. can be relied upon for modifying Rostoker et al. to store electrical interface configuration information about industrial machines or to configure electrical interfaces to the machines based on the stored interface configuration information. Fackler et al. disclose a smart cable over which Rostoker et al. was intended as an improvement. Khan et al. do not disclose configurable interfaces.

Although Khan et al. refer to removable memory in the form of templates 33, the memory is supplied to a central controller rather than to a programmable interface and does not include the claimed electrical interface configuration information.

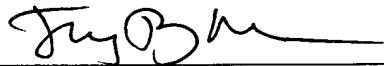
Claims 5 and 12 also stand rejected as obvious over the combination of the patents to Heidhues and Khan et al. Claims 6 and 13 stand rejected as obvious over the combination of the patent to Heidhues and US Patent No. 5,963,450 to Dew.

Khan et al.'s deficiencies in combination with Heidhues are the similar to those in combination with Rostoker et al. Dew provides for controlling welding equipment by providing a common database management system. Dew's PC does not process configuration information for electrically configuring machine interfaces.

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In view of the above, all of the pending claims 1-14 are believed in condition for allowance. Reconsideration of the rejected claims and allowance of the pending claims are respectfully requested. For any questions on this response or the application, the Examiner is invited to contact applicants' representative at the telephone number given below.

Respectfully submitted,



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